

Aleksander Kozak, "Transport Coefficients of the Quark-Gluon Plasma within the Relaxation Time Approximation"

Contribution ID : 1

Type : **not specified**

Scalar-tensor gravity in the Palatini approach

Thursday, 26 October 2017 14:15 (60)

Both scalar-tensor theories and Palatini formalism are means of alternating classical theory of gravity in order to account for phenomena being seemingly unexplainable on the ground of the Einstein theory, or to serve as toy models used to test limitations of the theory in question [1]. In the literature both Palatini approach and scalar-tensor theories have been widely discussed, but there are very few - if none - authors writing about a merge of these two ideas. During the seminar I will present a possible action functional for such class of theories. We aim at analysing the theory using the language of invariants, allowing us to write down all equations in a way independent of our choice of the conformal frame [2]. Two frames most frequently used in the literature will be also discussed: Einstein and Jordan frame. The mathematical machinery will be then applied to $f(R)$ theories, enabling us to obtain Friedmann equations and investigate inflationary behaviour in the Starobinsky model.

References:

1. S. Capozziello, V. Faraoni, Beyond Einstein Gravity: A Survey of Gravitational Theories for Cosmology and Astrophysics, Springer (2011)
2. L. Jarv, P. Kuusk, M. Saal, O. Vilson, Invariant quantities in the scalar-tensor theories of gravitation, Phys. Rev. D 91, 024041 (2015)

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